NOAA Restoration Center Project Monitoring

Sound Research for Successful Restoration

Why Monitor?

The Estuary Restoration Act (ERA) of 2000 directed NOAA to develop restoration monitoring protocols for all ERA-funded projects. NOAA's Restoration Center (RC) has embraced this mandate and will expand it to cover all NOAA-funded restoration projects. By requiring quantitative monitoring of hundreds of NOAA projects, and collectively analyzing results, we have the potential to improve restoration success nation-wide. Without this evaluation process we cannot learn from our successes or correct our failures.

Getting Started

To grow the Restoration Center's research efforts, quantitative monitoring is required on 25 percent of the 2005-funded projects, 50 percent of 2006 projects, and 75 percent of 2007 projects. NOAA's RC relies on local partners to monitor their restoration projects. Many of these groups are well versed in research techniques and have been monitoring for years – others are relatively new to the monitoring process. To assist both these groups, RC technical staff are available to work directly with partners to help them develop and implement sound monitoring plans.

Shared Knowledge, Shared Success

NOAA's Restoration Center strives to share research results with the larger restoration community through seminars, publications, our website (http://www.nmfs.noaa.gov/habitat/restoration/), and direct relationships with hundreds of grantees. Knowledge gained through the RC's applied research approach is based on hundreds of real world examples from around the country. Applying this knowledge leads to superior restoration techniques and healthier habitats and ecosystems. Together, we can use the results of these evaluation efforts to close the loop between today's monitoring information and tomorrow's restoration actions.

Monitoring Helps Us:

- *Determine* which restoration techniques produce the best results and why.
- *Maximize* restoration efficiency and cost effectiveness.
- *Define* which factors are the best indicators of success.
- *Suggest* appropriate timeframes for determining success.

Volunteers conduct a transect survey of a restored oyster reef to evaluate project success.

DEVELOPING A MONITORING PLAN

Four main steps are required to develop an effective monitoring plan – a plan that meets NOAA's minimum monitoring requirements.

Step 1. *Develop at least one broad* ***goal*** *for the project.* This goal identifies the project's general intent.

Step 2. *Develop at least two quantifiable* ***objective statements*** *related to the goal.* These statements specify what you hope to achieve during the project period. One objective should relate to structure, which is how the habitat looks. The other objective should relate to function, which is how the habitat works.

Step 3. *For each objective, identify a* ***parameter*** *to monitor.* These parameters are measured before and after the restoration to determine if the objectives were achieved.

Step 4. *Define a* ***target*** *value for each parameter.* These targets represent the expected outcomes at the end of the project period (short-term goals). Falling short of a target does not mean that a project has failed, rather, that we need to further examine this type of project to improve the applied techniques.

What if the project "fails"?

The goal of monitoring and evaluation is to **learn** from project results. If a project misses its targets, it demonstrates a need to improve restoration techniques and helps prioritize research efforts.

How to define a target? To determine a target, first identify the ideal condition for each selected parameter (the **reference** value). Reference values may be obtained either directly from a reference site or from literature. Using the reference value, the current understanding of the restoration site, and the effectiveness of other similar restorations, estimate a realistic improvement to be achieved at the end of the project period (the **target**). Habitats can take decades to become fully restored; therefore, it is not expected that the restoration project will achieve the reference value during the short project period.

Monitoring Plan Example

Goal

- Restore a degraded salt marsh to a healthy state.

Objectives

- Increase the abundance of native salt marsh vegetation (structure).
- Improve the marsh's ability to provide habitat for desired fish species (function).

Parameters

- Percent cover of native species (structure).
- Population size of the desired fish species (function).

Targets

- Greater than 40% cover of native plant species (structure).
- 10% increase in the desired fish population utilizing the salt marsh (function).

Working Together

NOAA Restoration Center staff can provide assistance to individuals interested in developing a monitoring and evaluation plan for their restoration project. More information on regional staff can be found at www.nmfs.noaa.gov/habitat/restoration/contact.html.